UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/653,321 | 09/02/2003 | Robert L. Lawton | BX/TF-101.P.1 | 3513 |

46251 7590 07/29/2005

T. D. FOSTER
12760 HIGH BLUFF DRIVE, SUITE 300
SAN DIEGO, CA 92130

| EXAMINER | |
|---|---|
| FORMAN, BETTY J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1634 | |

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/653,321 | LAWTON, ROBERT L. | |
| | Examiner | Art Unit | |
| | BJ Forman | 1634 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) *45 and 46* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

**FINAL ACTION**

***Status of the Claims***

1. This action is in response to papers filed 21 April 2005 in which claims 1, 11-18, 22-44 were amended. The amendments have been thoroughly reviewed and entered. The previous objections and rejections in the Office Action dated 4 February 2004 are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection are discussed.

The examiner and art unit for this application has changed. Please address future correspondence to Examiner BJ Forman, Art Unit: 1634.

Claims 1-44 are under prosecution.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baez et al (U.S. Patent No. 6,511,809, filed 16 May 2001) and Reddy et al (U.S. Patent No. 5,648,213, filed 30 August 1994).

Regarding Claim 1, Baez et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct

comprising a nucleic acid portion and a non-nucleic acid recognition portion which recognizes and binds (i.e., nucleic acid-tagged antibody) said compound of interest (Column 3, lines 34-41), (b) mixing, in solution, said binding construct with said sample to form construct-compound complexes (Column 12, lines 24-32 and 55-65); removing unbound analytes and detecting the presence or absence of said nucleic acid portion of said binding construct (Column 3, Lines 59-64 and Column 12, lines 33-58 and 66-Column 13, line 17). Baez et al do not teach addition of surface bearing non-nucleic acid binding targets for binding unbound binding constructs. However, Reddy et al teach a similar method for detecting a non-nucleic acid compound of interest in a sample comprising mixing, in solution, a non-nucleic acid binding construct (antibody) and non-nucleic acid of interest (analyte) to form a complex and then adding a second non-nucleic acid binding target (competitor) for binding unbound antibodies, immobilizing to a surface the competitor and unbound antibodies prior to detection of the compound of interest (Column 3, line 40-Column 4, line 30). Reddy et al further teach that is it well known in the art that the addition of a competitor and removal of competitor-unbound antibody complex is "particularly useful for detecting small analytes" (Column 3, lines 41-46). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the assay of Baez et al by addition of competitor and removal of competitor-unbound antibody complexes based on the well known usefulness in small analyte detection as taught by Reddy et al (Column 3, lines 4146).

Regarding Claim 2, Baez et al teach their immobilization surface selected from the group consisting of: particles, powders, beads, planar structures, non-planar structures, a tube, a well, non-porous films, non-porous membranes, porous films, porous membranes, fibers, fillers, meshes, grids, filters, matrices, gels, and combinations thereof (Column 15, lines 1-14). And Reddy et al teach the similar method wherein the immobilization surface is selected from the group consisting of: particles, powders, beads, planar structures, non-planar structures, a tube, a well, non-porous films, non-porous membranes, porous films, porous

membranes, fibers, fillers, meshes, grids, filters, matrices, gels, and combinations thereof (Column 8, Line 45-Column 9, line 56).

Regarding Claim 3, Baez et al teach their immobilization surface comprises particles (Column 15, lines 6-10). And Reddy et al teach the method wherein the surface comprises particles (Column 8, lines 46-65).

Regarding Claim 4, Baez et al teach their immobilization surface comprises particles magnetic (Column 15, lines 6-10).

Regarding Claim 5, Baez et al teach their immobilization surface comprises particles magnetic (Column 15, lines 6-10). While they do not teach a separation step using a magnet, their teaching of a magnetic particle support clearly suggests use of a magnet for separation. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use a magnet to separate compounds immobilized on the magnetic particles because absent use of a magnet, use of magnetic particles would be meaningless.

Regarding Claim 6, Baez et al teach said detection of the presence or absence of said nucleic acid portion comprises amplification of said nucleic acid portion (Column 5, lines 26-29).

Regarding Claim 7, Baez et al teach said detection comprises amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 8, Baez et al teach said detection comprises amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 9, Baez et al teach said detection comprises enzymatic amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 10, Baez et al teach said detection of the presence or absence of said nucleic acid portion comprises amplification of said nucleic acid portion (Column 5, lines 26-29).

Regarding Claim 11, Baez et al teach said amplification comprises PCR (Column 5, Lines 26-29).

Regarding Claim 12, Baez et al teach the method wherein said recognition portion comprises a receptor (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion is a receptor e.g. antibody-Fab fragment (Column 2, lines 30-52).

Regarding Claim 13, Baez et al further teach wherein said recognition portion comprises an antigen (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion is an antigen i.e. immunoreactive peptide (Column 2, lines 30-52).

Regarding Claim 14, Baez et al teach wherein said recognition portion comprises an antibody (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion comprises an antibody (Column 2, lines 30-52).

Regarding Claim 15, Baez et al teach wherein said recognition portion comprises an antibody (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion comprises an antibody (Column 2, lines 30-52). As previously stated the claim language "comprises a single chain antibody variable region' encompasses additional components (e.g. a complete antibody).

Regarding Claim 16, Baez et al teach the method wherein said recognition portion comprises a Fab fragment (Column 7, Lines 24-26). And Reddy et al teach the similar method wherein the recognition portion is a Fab fragment (Column 2, lines 35-37).

Regarding Claim 17, Baez et al teach the method wherein the recognition portion comprises a Fab fragment and the antibody is attached to the nucleic acid via sulfhydryl (Column 24, lines 37-67). And Reddy et al teach the Fab fragment is attached to the nucleic acid via sulfhydryl (Column 5, lines 64-67). Reddy et al further teach attachment via the Fab fragment produces superior results, particularly in competition assays (Column 5, line 64-Column 6, line 7).

Regarding Claim 18, Baez et al teach the method wherein said compound of interest comprises an antibody, said recognition portion comprises an antigen that is recognized by said compound of interest, and said accessible binding targets comprise an antibody that is capable of recognizing and binding to said recognition portion of said binding construct (Column 11, Line 10 - Column 12, Line 9., Figures 1 and 2).

Regarding Claim 19, Baez et al teach the method wherein said nucleic acid portion comprises DNA (Column 5, Lines 35-37). And Reddy et al teach the similar method wherein the nucleic acid is DNA (Column 5, lines 10-12).

Regarding Claim 20, Baez et al teach the method wherein said nucleic acid portion comprises RNA (Column 5, Lines 35-37). And Reddy et al teach the similar method wherein the nucleic acid is RNA (Column 5, lines 10-12).

Regarding Claim 21, Baez et al teach wherein said nucleic acid portion comprises a sequence that does not include a sequence that is expected to be found in the sample i.e. they are defined as "reporters" not encoding and/or target molecules (Column 7, Lines 49-57).

Regarding Claim 22, Baez et al teach the method further providing two or more different types of binding constructs, wherein each of said two or more different binding constructs has a different recognition portion and a different nucleic acid portion (Column 15, line 66 - Column 16, Line 3). Reddy et al also teach the similar method comprising two or more different binding constructs (Column 15, lines 4-45).

Regarding Claim 23, Baez et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct comprising a nucleic acid portion and a non-nucleic acid recognition portion which recognizes and binds (i.e., nucleic acid-tagged antibody) said compound of interest (Column 3, lines 34-41), (b) mixing, in solution, said binding construct with said sample to form construct-compound complexes (Column 12, lines 24-32 and 55-65); removing unbound analytes and detecting the presence or absence of said nucleic acid portion of said binding construct

(Column 3, Lines 59-64 and Column 12, lines 33-58 and 66-Column 13, line 17). Baez et al do not teach addition of surface bearing non-nucleic acid binding targets for binding unbound binding constructs. However, Reddy et al teach a similar method for detecting a non-nucleic acid compound of interest in a sample comprising mixing, in solution, a non-nucleic acid binding construct (antibody) and non-nucleic acid of interest (analyte) to form a complex and then adding a second non-nucleic acid binding target (competitor) for binding unbound antibodies, immobilizing to a surface the competitor and unbound antibodies prior to detection of the compound of interest (Column 3, line 40-Column 4, line 30). Reddy et al further teach that is it well known in the art that the addition of a competitor and removal of competitor-unbound antibody complex is "particularly useful for detecting small analytes" (Column 3, lines 41-46). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the assay of Baez et al by addition of competitor and removal of competitor-unbound antibody complexes based on the well known usefulness in small analyte detection as taught by Reddy et al (Column 3, lines 4146).

Regarding Claim 24, Baez et al teach their immobilization surface selected from the group consisting of: particles, powders, beads, planar structures, non-planar structures, a tube, a well, non-porous films, non-porous membranes, porous films, porous membranes, fibers, fillers, meshes, grids, filters, matrices, gels, and combinations thereof (Column 15, lines 1-14). And Reddy et al teach the similar method wherein the immobilization surface is selected from the group consisting of: particles, powders, beads, planar structures, non-planar structures, a tube, a well, non-porous films, non-porous membranes, porous films, porous membranes, fibers, fillers, meshes, grids, filters, matrices, gels, and combinations thereof (Column 8, Line 45-Column 9, line 56).

Regarding Claim 25, Baez et al teach their immobilization surface comprises particles (Column 15, lines 6-10). And Reddy et al teach the method wherein the surface comprises particles (Column 8, lines 46-65).

Regarding Claim 26, Baez et al teach their immobilization surface comprises magnetic particles (Column 15, lines 6-10).

Regarding Claim 27, Baez et al teach their immobilization surface comprises particles magnetic (Column 15, lines 6-10). While they do not teach a separation step using a magnet, their teaching of a magnetic particle support clearly suggests use of a magnet for separation. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use a magnet to separate compounds immobilized on the magnetic particles because absent use of a magnet, use of magnetic particles would be meaningless.

Regarding Claim 28, Baez et al teach said detection of the presence or absence of said nucleic acid portion comprises amplification of said nucleic acid portion (Column 5, lines 26-29).

Regarding Claim 29, Baez et al teach said detection comprises amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 30, Baez et al teach said detection comprises amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 31, Baez et al teach said detection comprises enzymatic amplification of said nucleic acid via PCR (Column 5, Lines 26-29).

Regarding Claim 32, Baez et al teach said detection of the presence or absence of said nucleic acid portion comprises amplification of said nucleic acid portion (Column 5, lines 26-29).

Regarding Claim 33, Baez et al teach said amplification comprises PCR (Column 5, Lines 26-29).

Regarding Claim 34, Baez et al teach the method wherein said recognition portion comprises a receptor (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion is a receptor e.g. antibody-Fab fragment (Column 2, lines 30-52).

Regarding Claim 35, Baez et al further teach wherein said recognition portion comprises an antigen (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion is an antigen i.e. immunoreactive peptide (Column 2, lines 30-52).

Regarding Claim 36, Baez et al teach wherein said recognition portion comprises an antibody (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion comprises an antibody (Column 2, lines 30-52).

Regarding Claim 37, Baez et al teach wherein said recognition portion comprises an antibody (Column 7, Lines 54-57). And Reddy et al teach the similar method wherein the recognition portion comprises an antibody (Column 2, lines 30-52). As previously stated the claim language "comprises a single chain antibody variable region' encompasses additional components (e.g. a complete antibody).

Regarding Claim 38, Baez et al teach the method wherein said recognition portion comprises a Fab fragment (Column 7, Lines 24-26). And Reddy et al teach the similar method wherein the recognition portion is a Fab fragment (Column 2, lines 35-37).

Regarding Claim 39, Baez et al teach the method wherein the recognition portion comprises a Fab fragment and the antibody is attached to the nucleic acid via sulfhydryl (Column 24, lines 37-67). And Reddy et al teach the Fab fragment is attached to the nucleic acid via sulfhydryl (Column 5, lines 64-67). Reddy et al further teach attachment via the Fab fragment produces superior results, particularly in competition assays (Column 5, line 64-Column 6, line 7).

Regarding Claim 40, Baez et al teach the method wherein said compound of interest comprises an antibody, said recognition portion comprises an antigen that is recognized by said compound of interest, and said accessible binding targets comprise an antibody that is capable of recognizing and binding to said recognition portion of said binding construct (Column 11, Line 10 - Column 12, Line 9., Figures 1 and 2).

Regarding Claim 41, Baez et al teach the method wherein said nucleic acid portion comprises DNA (Column 5, Lines 35-37). And Reddy et al teach the similar method wherein the nucleic acid is DNA (Column 5, lines 10-12).

Regarding Claim 42, Baez et al teach the method wherein said nucleic acid portion comprises RNA (Column 5, Lines 35-37). And Reddy et al teach the similar method wherein the nucleic acid is RNA (Column 5, lines 10-12).

Regarding Claim 43, Baez et al teach wherein said nucleic acid portion comprises a sequence that does not include a sequence that is expected to be found in the sample i.e. they are defined as "reporters" not encoding and/or target molecules (Column 7, Lines 49-57).

Regarding Claim 44, Baez et al teach the method further providing two or more different types of binding constructs, wherein each of said two or more different binding constructs has a different recognition portion and a different nucleic acid portion (Column 15, line 66 - Column 16, Line 3). Reddy et al also teach the similar method comprising two or more different binding constructs (Column 15, lines 4-45).

**Response to Arguments**

4. Applicant asserts that the method of Baez et al requires two antibodies that form a DNA bridge that is then amplified. Applicant argues that the instantly claimed method is far less complex including simple binding and removal of unbound construct. The argument has been considered but is not found persuasive because the instant claim language "comprising" encompasses any additional steps taught in the prior art.

Applicant asserts that Baez et al capture the analyte on a solid support prior to contact with the DNA-conjugated antibodies. Applicant asserts that the instantly claimed method uses solution phase capture. The argument has been considered but is not found persuasive because Baez et al specifically teach solution phase contact between the DNA-conjugated antibodies and target e.g. (sequential contact and homogeneous assays, Column 12, lines 24-32 and lines 55-65).

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Conclusion**

6. No claim is allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
July 26, 2005